

Elevator Installers and Repairers

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Significant Points

- Workers learn the trade through 4 years of on-the-job training and classroom instruction.
- Job opportunities are expected to be limited in this small occupation; prospects should be best for those with postsecondary education in electronics.
- Elevator installers and repairers lose less worktime due to inclement weather than do other construction trades workers.

Nature of the Work

Elevator installers and repairers—also called *elevator constructors* or *elevator mechanics*—assemble, install, and replace elevators, escalators, dumbwaiters, moving walkways, and similar equipment in new and old buildings. Once the equipment is in service, they maintain and repair it as well. They also are responsible for modernizing older equipment.

To install, repair, and maintain modern elevators, which are almost all electronically controlled, elevator installers and repairers must have a thorough knowledge of electronics, electricity, and hydraulics. Many elevators are controlled with microprocessors, which are programmed to analyze traffic conditions in order to dispatch elevators in the most efficient manner. With these computer controls, it is possible to get the greatest amount of service with the least number of cars.

When installing a new elevator, installers and repairers begin by studying blueprints to determine the equipment needed to install rails, machinery, car enclosures, motors, pumps, cylinders, and plunger foundations. Once this has been done, they begin equipment installation. Working on scaffolding or platforms, installers bolt or weld steel rails to the walls of the shaft to guide the elevator.

Elevator installers put in electrical wires and controls by running tubing, called conduit, along a shaft's walls from floor to floor. Once the conduit is in place, mechanics pull plastic-covered electrical wires through it. They then install electrical components and related devices required at each floor and at the main control panel in the machine room.

Installers bolt or weld together the steel frame of an elevator car at the bottom of the shaft; install the car's platform, walls, and doors; and attach guide shoes and rollers to minimize the lateral motion of the car as it travels through the shaft. They also install the outer doors and door frames at the elevator entrances on each floor.

For cabled elevators, these workers install geared or gearless machines with a traction drive wheel that guides and moves heavy steel cables connected to the elevator car and counterweight. (The counterweight moves in the opposite direction from the car and balances most of the weight of the car to reduce the weight that the elevator's motor must lift.) Elevator installers also install elevators in which a car sits on a hydraulic plunger that is driven by a pump. The plunger pushes the elevator car up from underneath, similar to a lift in an auto service station.

Installers and repairers also install escalators. They put in place the steel framework, the electrically powered stairs, and the tracks, and install associated motors and electrical wiring. In addition to elevators and escalators, installers and repairers also may install devices such as dumbwaiters and material lifts—which are similar

to elevators in design—as well as moving walkways, stair lifts, and wheelchair lifts.

The most highly skilled elevator installers and repairers, called “adjusters,” specialize in fine-tuning all the equipment after installation. Adjusters make sure that an elevator is working according to specifications and is stopping correctly at each floor within a specified time. Once an elevator is operating properly, it must be maintained and serviced regularly to keep it in safe working condition. Elevator installers and repairers generally do preventive maintenance—such as oiling and greasing moving parts, replacing worn parts, testing equipment with meters and gauges, and adjusting equipment for optimal performance. They also troubleshoot and may be called to do emergency repairs.

A service crew usually handles major repairs—for example, replacing cables, elevator doors, or machine bearings. This may require the use of cutting torches or rigging equipment—tools that an elevator repairer normally would not carry. Service crews also do major modernization and alteration work, such as moving and replacing electrical motors, hydraulic pumps, and control panels.

Elevator installers and repairers usually specialize in installation, maintenance, or repair work. Maintenance and repair workers generally need greater knowledge of electricity and electronics than do installers, because a large part of maintenance and repair work is troubleshooting. Similarly, adjusters need a thorough knowledge of electricity, electronics, and computers to ensure that newly installed elevators operate properly.

Working Conditions

Most elevator installers and repairers work a 40-hour week. However, overtime is required when essential elevator equipment must be repaired, and some workers are on 24-hour call. Unlike most elevator installers, workers who specialize in elevator maintenance are on their own most of the day and typically service the same elevators periodically.

Elevator installers lift and carry heavy equipment and parts, and may work in cramped spaces or awkward positions. Potential hazards include falls, electrical shock, muscle strains, and other injuries related to handling heavy equipment. Because most of their work is performed indoors in buildings under construction or in existing buildings, elevator installers and repairers lose less worktime due to inclement weather than do other construction trades workers.



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Employment

Elevator installers and repairers held about 21,000 jobs in 2002. Most were employed by special trade contractors. Others were employed by field offices of elevator manufacturers, wholesale distributors, small-elevator maintenance and repair contractors, government agencies, or businesses that do their own elevator maintenance and repair.

Training, Other Qualifications, and Advancement

Most elevator installers and repairers apply for their jobs through a local of the International Union of Elevator Constructors. Applicants for apprenticeship positions must be at least 18 years old, have a high school diploma or equivalent, and pass an aptitude test. Good physical condition and mechanical aptitude also are important.

Elevator installers and repairers learn their trade in a program administered by local joint educational committees representing the employers and the union. These programs, through which the apprentice learns everything from installation to repair, combine on-the-job training with classroom instruction in blueprint reading, electrical and electronic theory, mathematics, applications of physics, and safety. In nonunion shops, workers may complete training programs sponsored by independent contractors.

Generally, apprentices must complete a 6-month probationary period. After successful completion, they work toward becoming fully qualified within 4 years. To be classified as a fully qualified elevator installer or repairer, union trainees must pass a standard examination administered by the National Elevator Industry Educational Program. Most States and cities also require elevator installers and repairers to pass a licensing examination. Both union and nonunion technicians may take the Certified Elevator Technician (CET) course offered by the National Association of Elevator Contractors.

Most apprentices assist experienced elevator installers and repairers. Beginners carry materials and tools, bolt rails to walls, and assemble elevator cars. Eventually, apprentices learn more difficult tasks such as wiring, which requires knowledge of local and national electrical codes.

High school courses in electricity, mathematics, and physics provide a useful background. As elevators become increasingly sophisticated, workers may find it necessary to acquire more advanced formal education—for example, in postsecondary technical school or junior college—with an emphasis on electronics. Workers with more formal education, such as an associate degree, usually advance more quickly than do their counterparts.

Many elevator installers and repairers also receive training from their employers or through manufacturers to become familiar with a particular company's equipment. Retraining is very important if a worker is to keep abreast of technological developments in elevator repair. In fact, union elevator installers and repairers typically receive continual training throughout their careers, through correspondence courses, seminars, or formal classes. Although voluntary, this training greatly improves one's chances for promotion.

Some installers may receive further training in specialized areas and advance to the position of mechanic-in-charge, adjuster, supervisor, or elevator inspector. Adjusters, for example, may be picked for their position because they possess particular skills or are electronically inclined. Other workers may move into management, sales, or product design jobs.

Job Outlook

Job opportunities are expected to be limited in this small occupation. A large proportion of elevator installer and repairer jobs are unionized and involve a significant investment in training. As a

result, workers tend to stay in this occupation for a long time. This investment in training, as well as good benefits and relatively high wages, results in fewer openings due to turnover, thus reducing job opportunities. Job prospects should be best for those with postsecondary education in electronics.

Employment of elevator installers and repairers is expected to increase about as fast as the average for all occupations through the year 2012. Job growth is related to the growth of nonresidential construction, such as commercial office buildings and stores that have elevators and escalators. The need to continually update and modernize old equipment, expand and access, improve appearance, and install increasingly sophisticated equipment and computerized controls also should add to the demand for elevator installers and repairers.

Because it is desirable that equipment always be kept in good working condition, economic downturns will have less of an effect on employment of elevator installers and repairers than on other construction trades.

Earnings

Median hourly earnings of elevator installers and repairers were \$25.99 in 2002. The middle 50 percent earned between \$20.08 and \$31.72. The lowest 10 percent earned less than \$14.60, and the top 10 percent earned more than \$36.81. In 2002, median hourly earnings in the miscellaneous special trade contractors industry were \$26.62. In addition to free continuing education, elevator installers and repairers receive basic benefits enjoyed by most other workers.

Related Occupations

Elevator installers and repairers combine electrical and mechanical skills with construction skills, such as welding, rigging, measuring, and blueprint reading. Other occupations that require many of these skills are boilermakers; electricians; electrical and electronics installers and repairers; industrial machinery installation, repair, and maintenance workers; sheet metal workers; and structural and reinforcing iron and metal workers.

Sources of Additional Information

For further information on opportunities as an elevator installer and repairer, contact:

► International Union of Elevator Constructors, 7154 Columbia Gateway Dr., Columbia, MD 21046. Internet: <http://www.iuec.org>

For additional information about the Certified Elevator Technician (CET) program, contact:

► National Association of Elevator Contractors, 1298 Wellbrook Circle, Suite A, Conyers, GA 30012. Internet: <http://www.naec.org>

There are more than 500 occupations registered by the U.S. Department of Labor's National Apprenticeship system. For more information on the Labor Department's registered apprenticeship system and links to State apprenticeship programs, check their Web site: <http://www.doleta.gov>.